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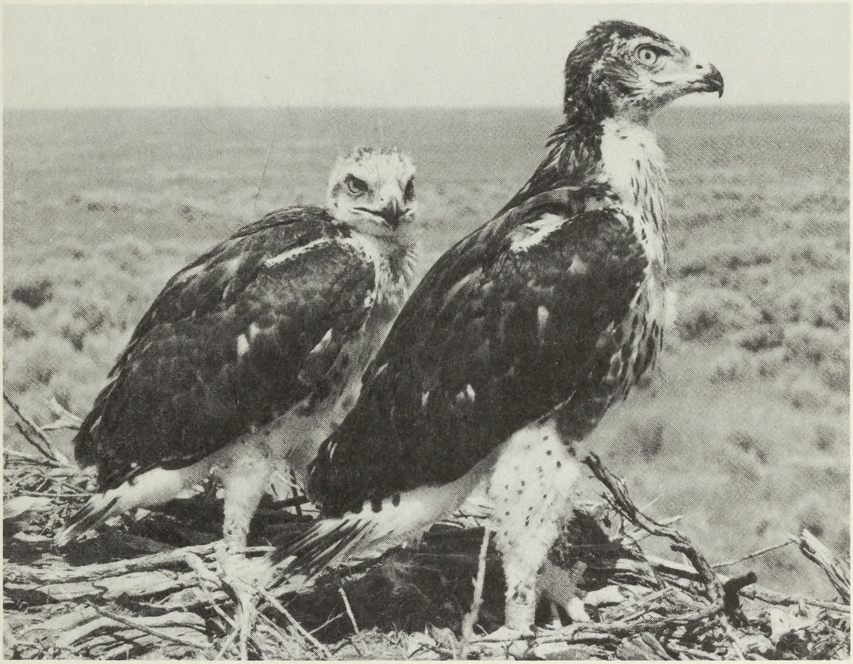
# Photographic Guide For Aging Nestling FERRUGINOUS HAWKS

Marc Q. Moritsch, 1985



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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SNAKE RIVER BIRDS OF PREY PROJECT
BOISE DISTRICT, IDAHO

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## INTRODUCTION

The ability to age nestlings is important in studies of growth, reproduction, and nesting chronology. Estimates of hatching and laying times, important components for determining nest success (Mayfield 1975), can be derived if a bird's age is known. Accurate aging is also necessary for determining when to band young.

Current methods for aging nestling raptors (Scharf and Balfour 1971, Petersen and Thompson 1977, Springer 1979, Bechard et al. 1985) are time-consuming and expensive, because they require that nests be entered and nestlings measured. This may also reduce nesting success because increased nestling mortality may occur if young are disturbed at certain times of the brood-rearing period (Fyfe and Olendorff 1976, Steenhof and Kochert 1982). A guide using photography to show morphological changes in nestlings during brood rearing allows estimates of age to be made without entering the nest. This is useful in both research and management studies requiring information on the ages of young birds.

## METHODS

During 1984, I photographed 2 nestling ferruginous hawks (Buteo regalis) at a nest in an artificial nesting structure constructed by the Bureau of Land Management (Howard and Hilliard 1980) in southwestern Idaho. Photographs of the first-hatched young are used in this guide.

Hatch date was determined by visually inspecting the nest. On the first visit, the structure contained eggs. The nest was checked every 2–3 days until hatching of the first egg was confirmed. Nest inspection consisted of driving close to the site, making a brief visual inspection of the nest, and leaving the area as quickly as possible.

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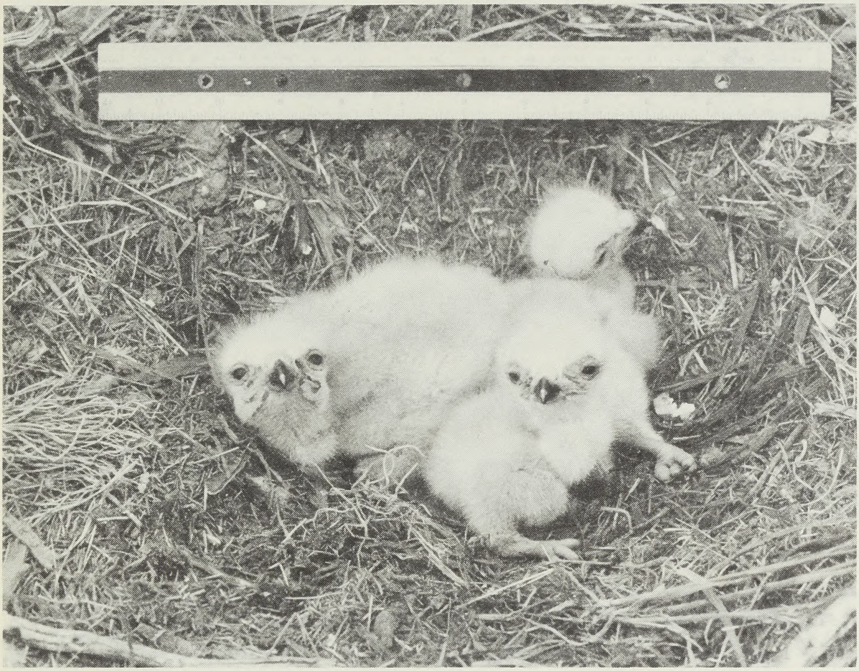
The nest was visited every 4–5 days from the time the oldest chick was 7 days old until it reached 40 days of age. The dorsal body and head were photographed to illustrate development of characteristic features. The proportion of down and feather development on dorsal and ventral body surfaces as well as body size were noted at each visit.

## RESULTS

I was able to assign a series of unique characteristics to each age class. The number and combinations of useful characteristics increased with nestling development until approximately 40 days when the majority of juvenile feathering was complete.

Nestlings remained downy until about 19 days of age. During this period, body down progressed from a sparse covering with numerous bare areas (apteria) to a thick, woolly mat when flight feathers first became visible. Although the primaries were approximately 20 mm long at 15 days, they were not visible through the down.

After 19 days, body size and the development of wing, tail, scapular, and head feathers allowed distinctions to be made at each age class. Comparisons among classes became easier.



**7 DAYS** The entire body is downy. Pink skin is visible on the legs, back, and wings. Total length is about 12.7 cm (5 in). The 7-day-old chick is on the left.

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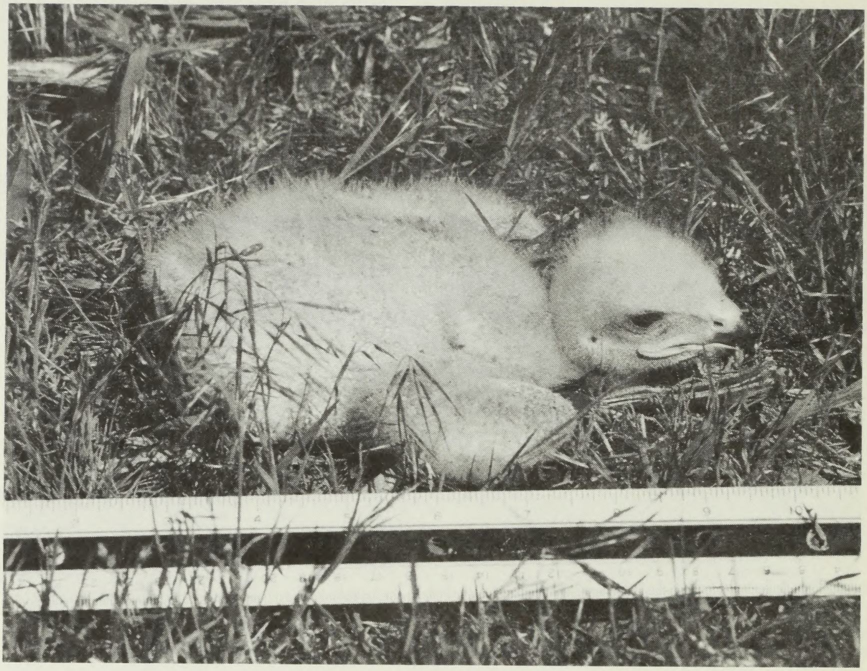
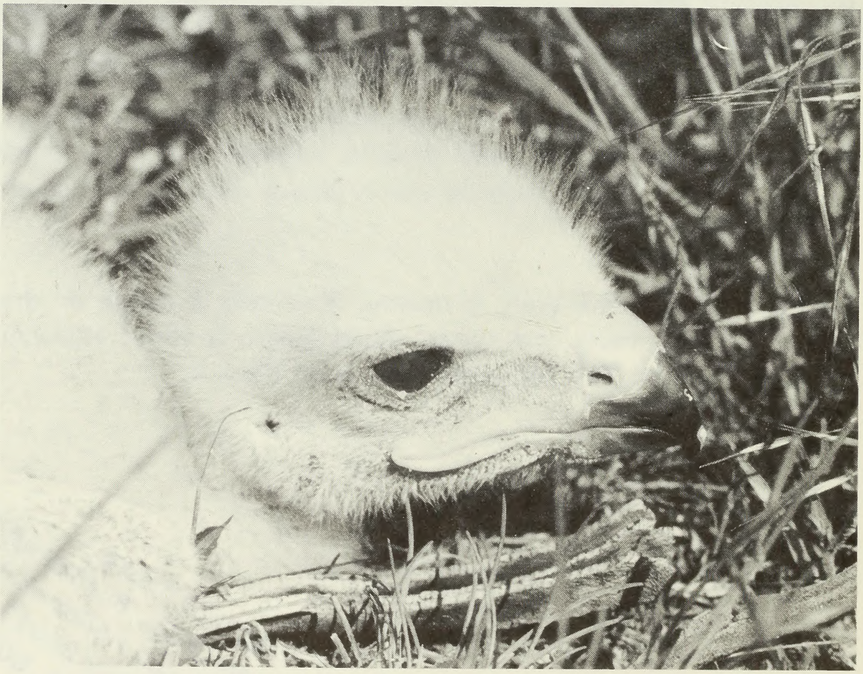
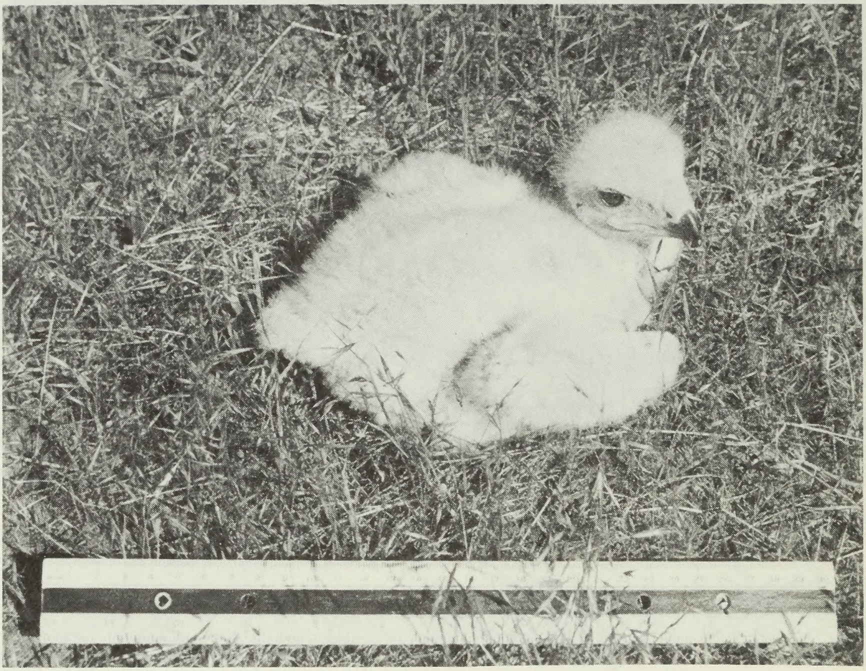
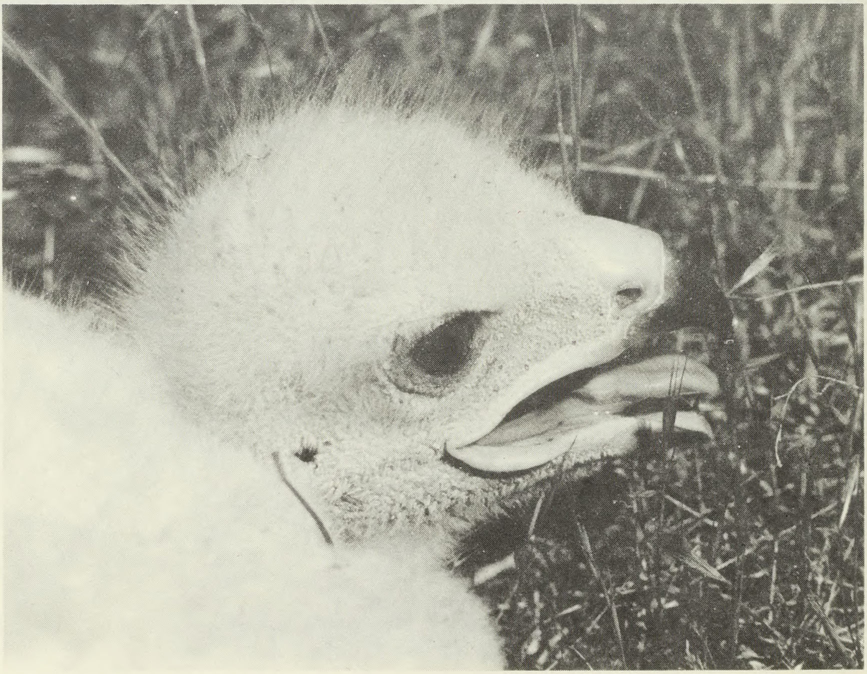


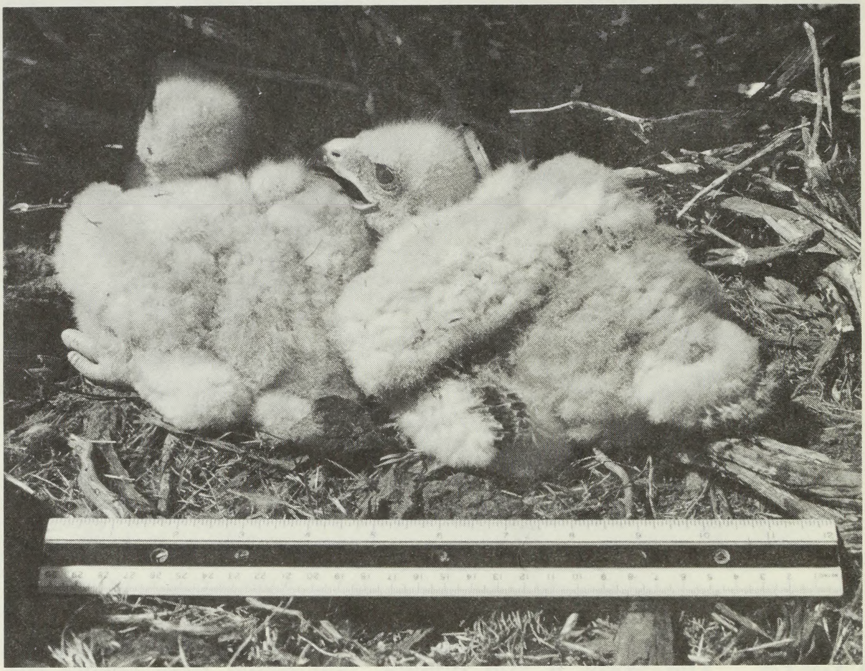


**11 DAYS** Light gray down occurs on the back and wings, with gray-white down on the head. Pink skin is visible on the wing and femur. The rectrices and remiges have not erupted. Total length is about 15.2 cm (6 in).

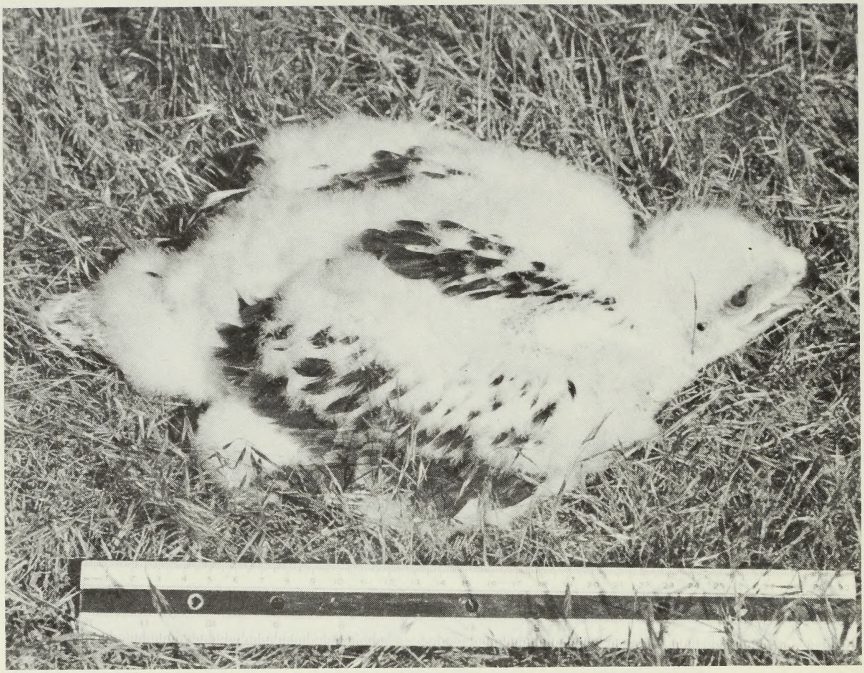


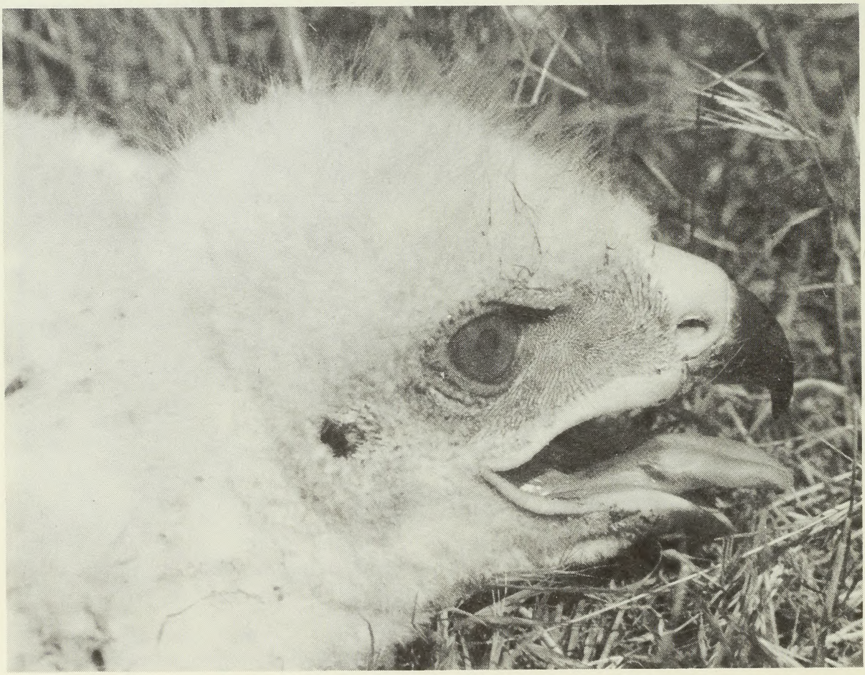


**15 DAYS** The body is still downy, and down now covers the bare skin (apteria). Rectrices and remiges have erupted, but are not yet visible when wings are folded. Total length is about 21.6 cm (8.5 in).

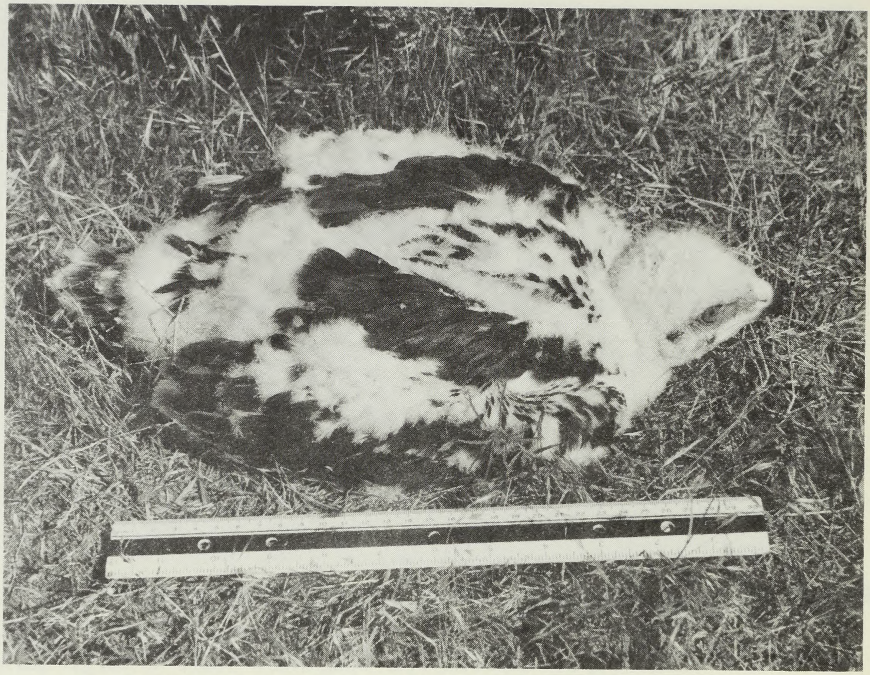


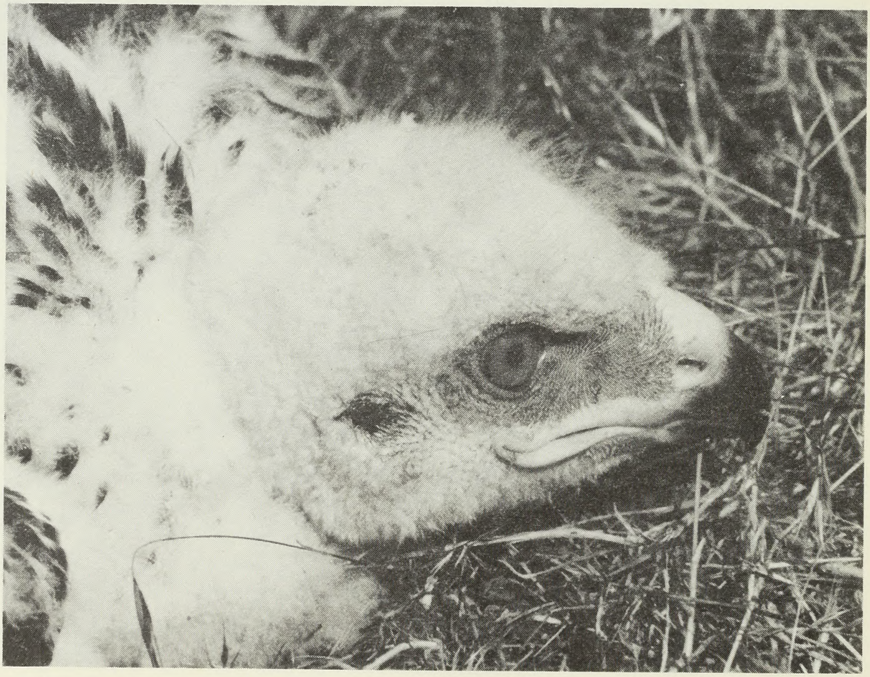
**19 DAYS** Primary and secondary feathers contrast with the whitish-gray down. Body down has a woolly appearance. Rectrices are out approximately 2.5 cm (1 in) and are still in the neossoptile stage. The scapulars show as brown spots along the back. The ears are not feathered. Total length is approximately 24.5 cm (10 in). The 19-day-old chick is on the right in both prints.



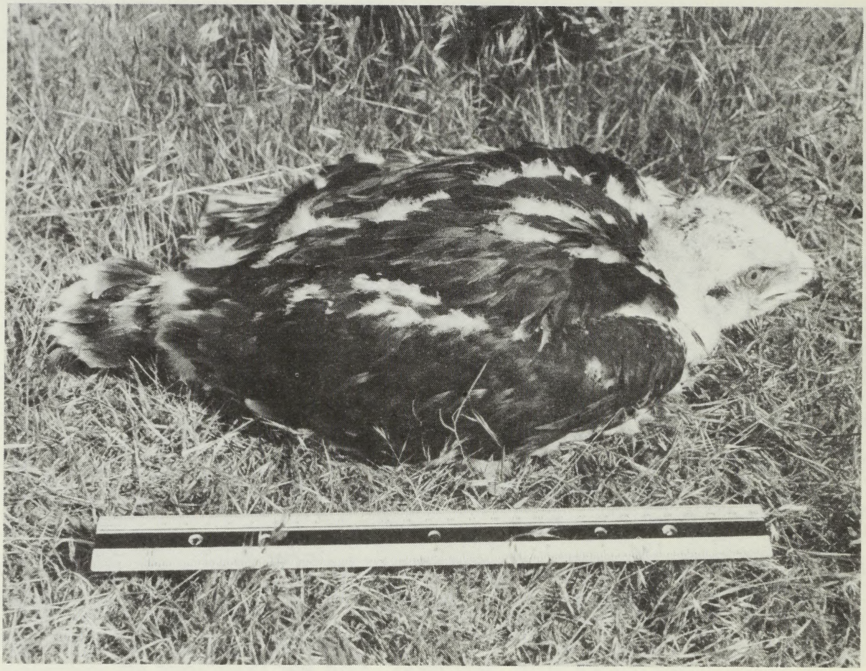


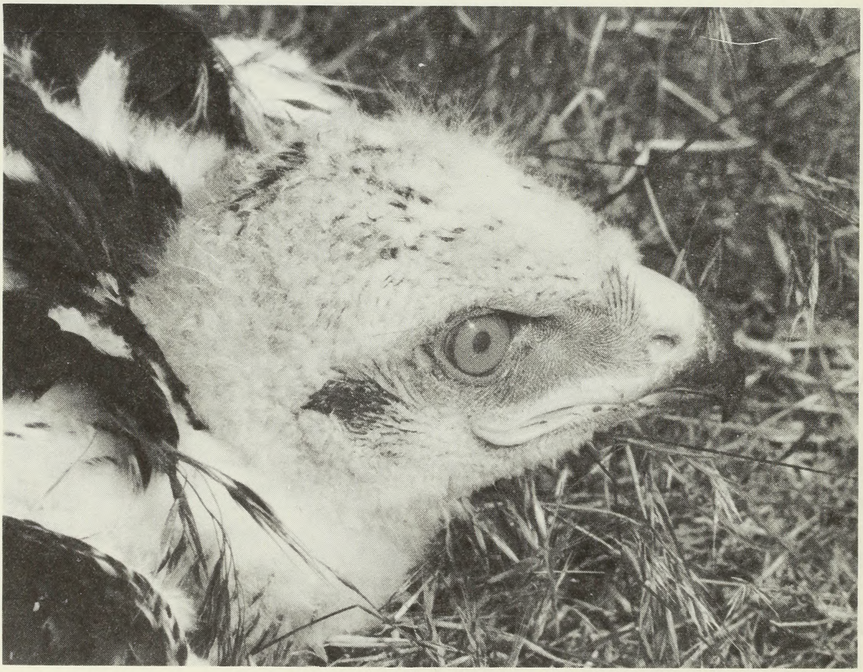
**24 DAYS** Dark primaries, secondaries, and coverts cover 30–40% of the dorsal surface of the wing and contrast with the whitish-gray down. The scapulars form a large dark patch along either side of the downy back. The head is downy; auriculars are just emerging. Rectrices are about 2.5 (1 in) long and are white with some brown showing with the neossoptile still visible on the top. The legs are downy. Total length is about 33 cm (13 in).



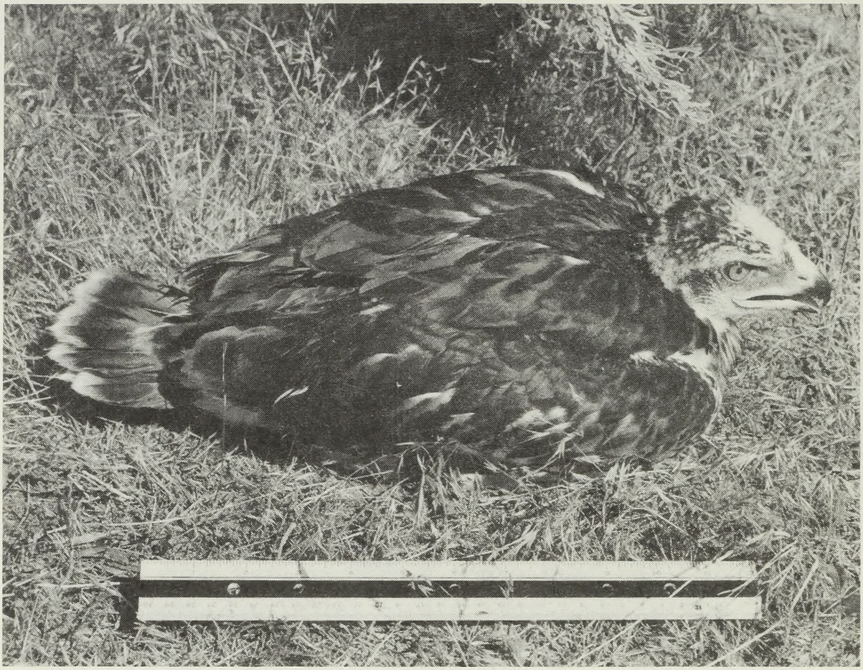


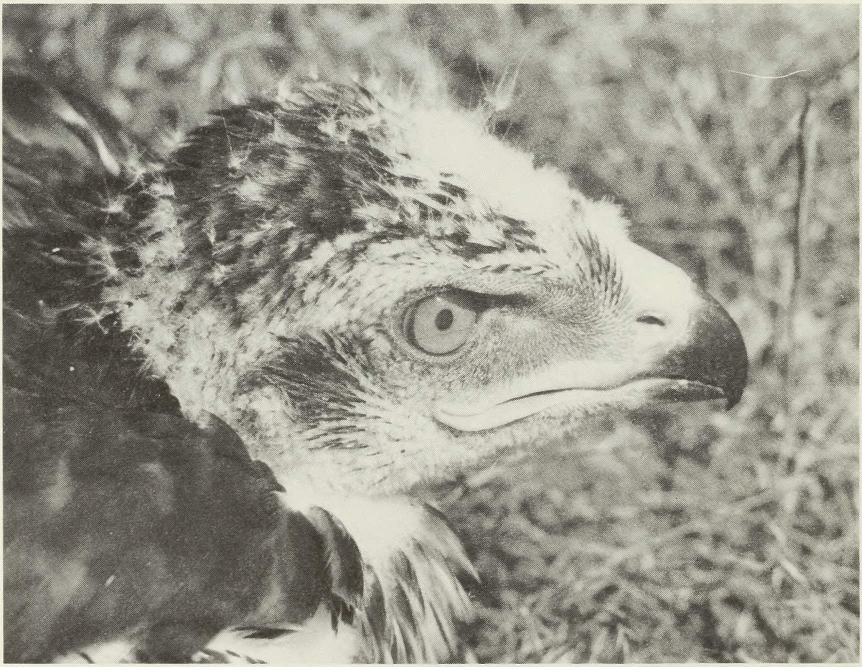
**28 DAYS** The dorsal body appears to be 50% feathered. Primaries, secondaries, wing coverts, axillars, and back and tail feathers are still visible. The head is downy with a few dark spots (pin feathers). The ear openings are partially feathered and show as small brown spots. Rectrices are approximately 5.2 cm (2 in) long; the rump is still downy. The lower back feathers (rump) are 2.5 cm (1 in) long. Legs and breast are still downy. Total length is 38.6 cm (14.5 in).



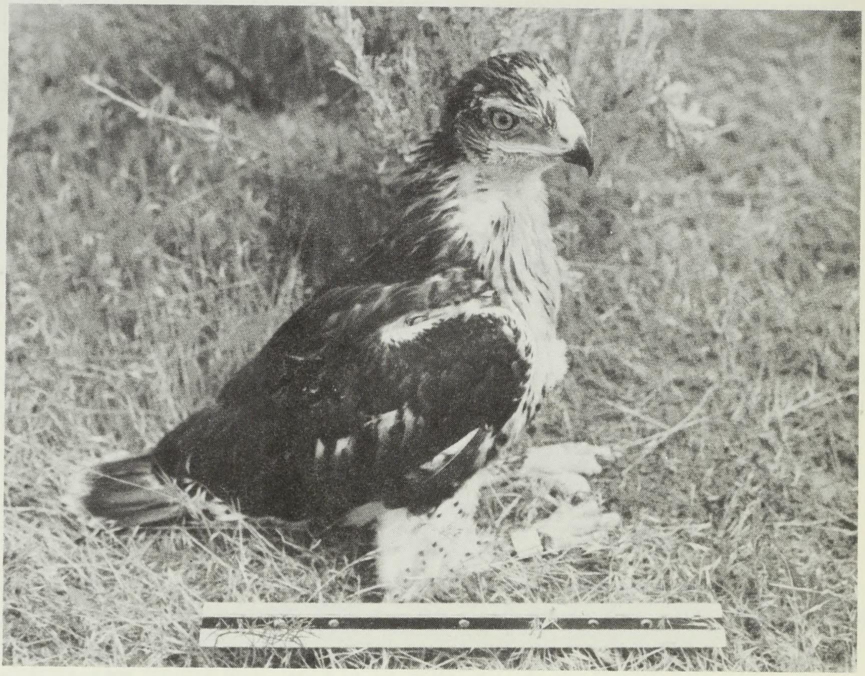


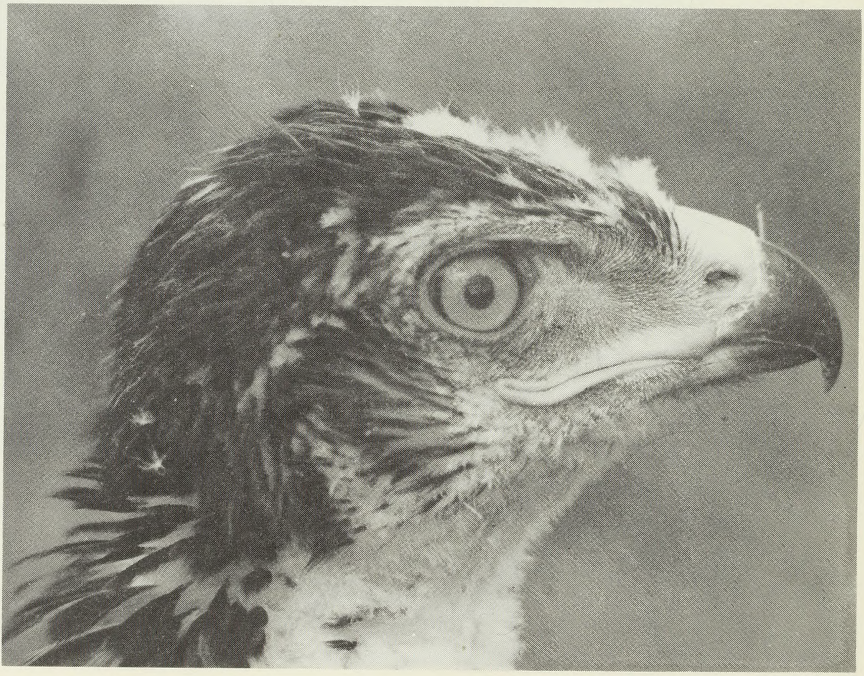
**32 DAYS** The dorsal body surface is 90% feathered and contrasts with the head which is 90% covered with light gray down. Head feathers show as a dark patch on the crown. Auriculars form a patch the size of the eye. Feathers are visible along either side of the breast in patches and cover 30% of the ventral surface. Light brown feathers are starting to show on the legs. A small amount of down remains on the rump. Total length is about 40.6 cm (16 in).





**36 DAYS** The dorsal body is about 99% feathered. The head is 50% feathers, with most of the feathering on the crown. Auriculars form a patch larger than the eye. The breast is 80% feathered. Rectrices are 10.2–12.7 cm (4–5 in) long. Outer surfaces of the legs are 40–50% feathered. Total length is about 41.9 cm (16.5 in).





**40 DAYS** The dorsal portion of the body is 100% feathered. The head is 80% feathered, with the upper frontal portion still downy. The breast is about 95% feathered. The chin is 80% feathered. The outer portion of the leg is 75% feathered, with the majority of the feathering on the uppper half. Dark feathers occur at the base of the tarsus. The inner portion of the leg is still 100% downy.

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# GLOSSARY*

**Apteria** — Bare featherless areas between pterylae or feather tracts.

**Auriculars** — Feathers covering the ear opening and the area immediately around it.

**Axillars** — Under wing feathers lying close to the body in the axilla or "armpit."

**Coverts** — Small feathers that cover the bases of the large flight feathers of the wings and tail, or that cover an area or structure.

**Juvenile Feathers** — Feathers which replace the natal down.

**Natal Down** — First feathers to form on young birds, replaced by the juvenile feathers.

**Neossoptile** — Natal down which sometimes remains attached to newly erupted juvenile feathers.

**Primaries** — The outermost and longest flight feathers on a bird's wing. Members of the order Falconiformes have 10 primaries.

**Rectrices** — Tail feathers.

**Remiges** — Large feathers of the wing, the primaries and secondaries.

**Scapulars** — A group of feathers on the shoulder, along the side of the back.

**Secondaries** — Large flight feathers located in a series along the rear edge of the wing, immediately inward from the primaries.

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*Sources: Pettingill (1970) and Welty (1975)

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